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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/818,621

03/28/2001

Somnath Viswanath

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10/18/2004

HARRITY & SNYDER, LLP
11240 WAPLES MILL ROAD
SUITE 300
FAIRFAX, VA 22030

EXAMINER

SHEW, JOHN

ART UNIT

PAPER NUMBER

2664

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/818,621

Applicant(s)

VISWANATH ET AL.

Examiner

John L Shew

Art Unit

2664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09102001.06302004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-13, 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Erimli et al.

Claim 1, Erimli teaches a network device configured to control communication of data frames between stations (Abstract lines 1-5) referenced by a multiport network switch determining transmission of copies of data frames to select ports, comprising a plurality of receive ports configured to receive data frames from the stations (Fig. 1, column 3 lines 33-47) referenced by the plurality of ports connected to network stations 14 and 22 for sending and receiving data, and data frame processing logic (Fig. 2, column 4 lines 65-67, column 5 lines 1-8) referenced by the internal decision making engine,

configured to determine a priority associated with a received data frame (column 6 lines 50-56, column 15 lines 62-66) referenced by the reception of multicopy frames carrying a high priority over unicopy frames, and determine whether a location in an external memory is available for storing the data frame based on the priority of the received data frame (Fig. 9a, column 13 lines 19-23, lines 48-54, column 14 lines 49-62) referenced by the frame copy number determining zero-copy, unicopy or multicopy frame and allocation of external memory for the buffer header.

Claim 2, Erimli teaches the data frame processing logic is further configured to drop the data frame when a location in the external memory is not available (column 15 lines 23-26) referenced by the discarding of the frame when the overflow area of the external memory is full.

Claim 3, Erimli teaches the data frame processing logic is further configured to transfer the data frame to the external memory when a location in the external memory is available (Fig. 7, column 10 lines 48-67) referenced by allocating individual output queue overflows 128 which are in external memory.

Claim 4, Erimli teaches at least one memory configured to store address information corresponding to locations in the external memory (Fig. 6, column 10 lines 39-58) referenced by memory of port output queue comprising of frame address pointers 14 to external memory for output queues overflow, the at least one memory being divided into

a number of groups corresponding to priorities associated with data frames received by the network device (Fig. 6) referenced by the the Unicopy Bit which represents low priority in comparison to the multicopy case representing high priority.

Claim 5, Erimli teaches wherein when determining whether a location in the external memory is available the data frame processing logic is configured to access the at least one memory (Fig. 6, column 10 lines 39-58) referenced by memory of port output queue comprising of frame address pointers 14 to external memory for output queues overflow, and determine whether an address in a first one of the groups corresponding to the priority of the data frame is available (Fig. 7, column 11 lines 14-33) referenced by the External Memory's Multicopy Queue Overflow for higher priority frames compared to the Port Output Queue Overflow for lower priority unicopy frames.

Claim 6, Erimli teaches wherein the at least one memory comprises a first memory associated with high priority data frames (Fig. 6, column 10 lines 39-47) referenced by the higher priority multicopy frame structure output queue which includes a VLAN index, and a second memory associated with data frames having normal or low priority (Fig. 5, column 10 lines 25-38) referenced by the lower priority unicopy frame structure output queue.

Claim 7, Erimli teaches at least one memory divided into a number of groups corresponding to priorities associated with data frames received by the network device

(Fig. 5, Fig. 6) referenced by the memories of unicopy output queue associated to lower priority and multicopy output queue associated to higher priority, the at least one memory being configured to store address pointers corresponding to locations in the external memory that are available for storing received data frames (Fig. 5, Fig. 6, Fig. 7, column 10 lines 48-67) referenced by the Frame Address Pointer which points to the output queue overflows resident in external memory, the number of address pointers in each of the groups being programmable (column 11 lines 1-7) referenced by the programmability of the base address register on the chip for the allocation of areas in external memory.

Claim 8, Erimli teaches a network device that controls communication of data frames between stations (Abstract lines 1-5) referenced by a multiport network switch determining transmission of copies of data frames to select ports, a method comprising receiving data frames from the stations (Fig. 1, column 3 lines 33-47) referenced by the plurality of ports connected to network stations 14 and 22 for sending and receiving data, determining a priority associated with a received data frame (column 6 lines 50-56, column 15 lines 62-66) referenced by the reception of multicopy frames carrying a high priority over unicopy frames, and determining based on the priority of the received data frame whether a location in an external memory is available for storing the data frame (Fig. 9a, column 13 lines 19-23, lines 48-54, column 14 lines 49-62) referenced by the frame copy number determining zero-copy, unicopy or multicopy frame and allocation of external memory for the buffer header.

Claim 9, Erimli teaches dropping the data frame when a location in the external memory is not available (column 15 lines 23-26) referenced by the discarding of the frame when the overflow area of the external memory is full.

Claim 10, Erimli teaches wherein dropping a data frame includes discarding the data frame and not forwarding the data frame to its intended destination (column 15 lines 23-26, column 1 lines 44-55) referenced by the discarding of the frame when the overflow area of the external memory is full wherein the discarding results in no transmission of the data frame.

Claim 11, Erimli teaches transferring the data frame to the external memory when a location in the external memory is available (Fig. 7, column 10 lines 48-67) referenced by allocating individual output queue overflows 128 which are in external memory.

Claim 12, Erimli teaches wherein the determining whether a location in external memory is available includes accessing a memory on the network device the memory being divided into a number of queues corresponding to priorities associated with data frames received by the network device (Fig. 5, Fig. 6, column 10 lines 39-58) referenced by internal memories of port output queues comprising of frame address pointers 14 to external memory for output queues overflow and reference by the the Unicopy Bit which represents low priority in comparison to the multicopy case representing high

priority, and determining whether an address in a first one of the queues corresponding to the priority of the data frame is available (Fig. 11, column 18 lines 28-35) referenced by the availability of free buffer pool pointers to external memory.

Claim 13, Erimli teaches wherein when the priority of the received data frame is high the determining whether a location in the external memory is available includes accessing a first queue associated with high priority data frames (Fig. 6, Fig. 7, column 15, lines 62-66, column 18 lines 28-35) referenced by the multicopy frame output queue which is associated to a higher priority followed by the availability of free buffer pool pointers to external memory, and determining whether an address in the first queue is available (Fig. 10, column 13 lines 25-47) referenced by the determination of the availability of buffers to output queues.

Claim 15, Erimli teaches a network device configured to control communications of data frames between stations (Abstract lines 1-5) referenced by a multiport network switch determining transmission of copies of data frames to select ports, comprising a plurality of receive ports configured to receive data frames from the stations (Fig. 1, column 3 lines 33-47) referenced by the plurality of ports connected to network stations 14 and 22 for sending and receiving data, a first queue associated with high priority data frames (Fig. 3, column 15 lines 62-66) referenced by the Multicopy Queue 90 which is a high priority queue, the first queue being configured to store pointers corresponding to addresses in an external memory (column 14 lines 16-24, lines 49-62) referenced by

placement of frame pointers into the multicopy queue with the update of buffer headers in external memory when the multicopy cache is full, a second queue associated with data frames having at least one of normal and low priority (Fig. 3, column 15 lines 62-66, column 13 lines 48-54) referenced by the Output Queue 74 for unicopy frames which is associated to normal and low priority in comparison to multicopy frames, the second queue being configured to store pointers corresponding to addresses in the external memory (column 7 lines 30-39, lines 56-64) referenced by placement of the frame pointer in the Output Queue 74 with overflow regions in external memory, and processing logic (Fig. 2, column 4 lines 65-67, column 5 lines 1-8) referenced by the multiport switch internal decision making engine, configured to determine a priority associated with a received data frame (column 6 lines 50-67) referenced by the determination of a multicopy high priority frame or a unicopy low priority frame, access one of the first and second queues based on the priority of the data frame (Fig. 3, column 7 lines 30-39, lines 56-64) referenced by the rules checker 42 determination of the appropriate output queues to place the frame pointer, determine whether a pointer is available in said accessed one of the first and second queues (Fig. 10, column 13 lines 25-47, lines 63-67, column 14 lines 1-24) referenced by the availability of buffers equating to the pointer availability with determination of copy number "1" for output queues or copy number ">1" for multicopy queues.

Claim 16, Erimli teaches wherein the processing logic is further configured to obtain a first pointer when a pointer is available in one of the first and second queues

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corresponding to the priority of the received frame (column 7 lines 56-64, column 11 lines 15-24, column 13 lines 48-54, lines 63-67, column 14 lines 1-62) referenced by the buffer manager checking the multicopy queue which has higher priority for allocation of frame pointers followed by allocation to the output queues to which a copy must be sent, and transfer the data frame to the external memory at an address identified by the first pointer (column 14 lines 49-62) referenced by the update of the header in external memory when the multicopy cache is full.

Claim 17, Erimli teaches wherein the processing logic is further configured to drop the data frame when a pointer is not available in one of the first and second queues corresponding to the priority of the received data frame (column 15 lines 24-30) reference by the inability to place a frame pointer for a unicity forwarding to an output queue results in discarding of the frame.

Claim 18, Erimli teaches wherein the network device is configured to stop processing the dropped data frame and not forward the dropped data frame to its intended destination (column 15 lines 23-26, column 1 lines 44-55) referenced by the discarding of the frame when the overflow area of the external memory is full wherein the discarding results in no transmission of the data frame.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erimli et al. in view of Goss.

Claims 14, 19, Erimli teaches an apparatus for determining multicopy high priority from unicopy low priority frames and selectively discarding packets in output queues. Erimli does not teach mapping priority indicator to a number of priority levels. Goss teaches mapping a priority indicator received with the data frame to one of a number of priority levels supported by the network device (Fig. 3, column 1 lines 11-24, lines 35-47) referenced by the priority queues CBR, VBR and ABR with additional mapping to quality sublevels.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the subclass mapping of Goss to the selective packet discard apparatus of Erimli for the purpose of establishing thresholds for discarding of cells based on priorities.

Citation of Prior Art

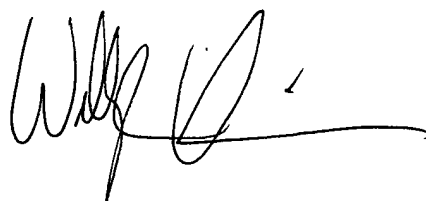
1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Patent 6798743, Ma et al. discloses a packet prioritization process for routing traffic. Patent 5850399, Ganmukhi et al. discloses a hierarchical packet scheduling method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John L Shew whose telephone number is 571-272-3137. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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